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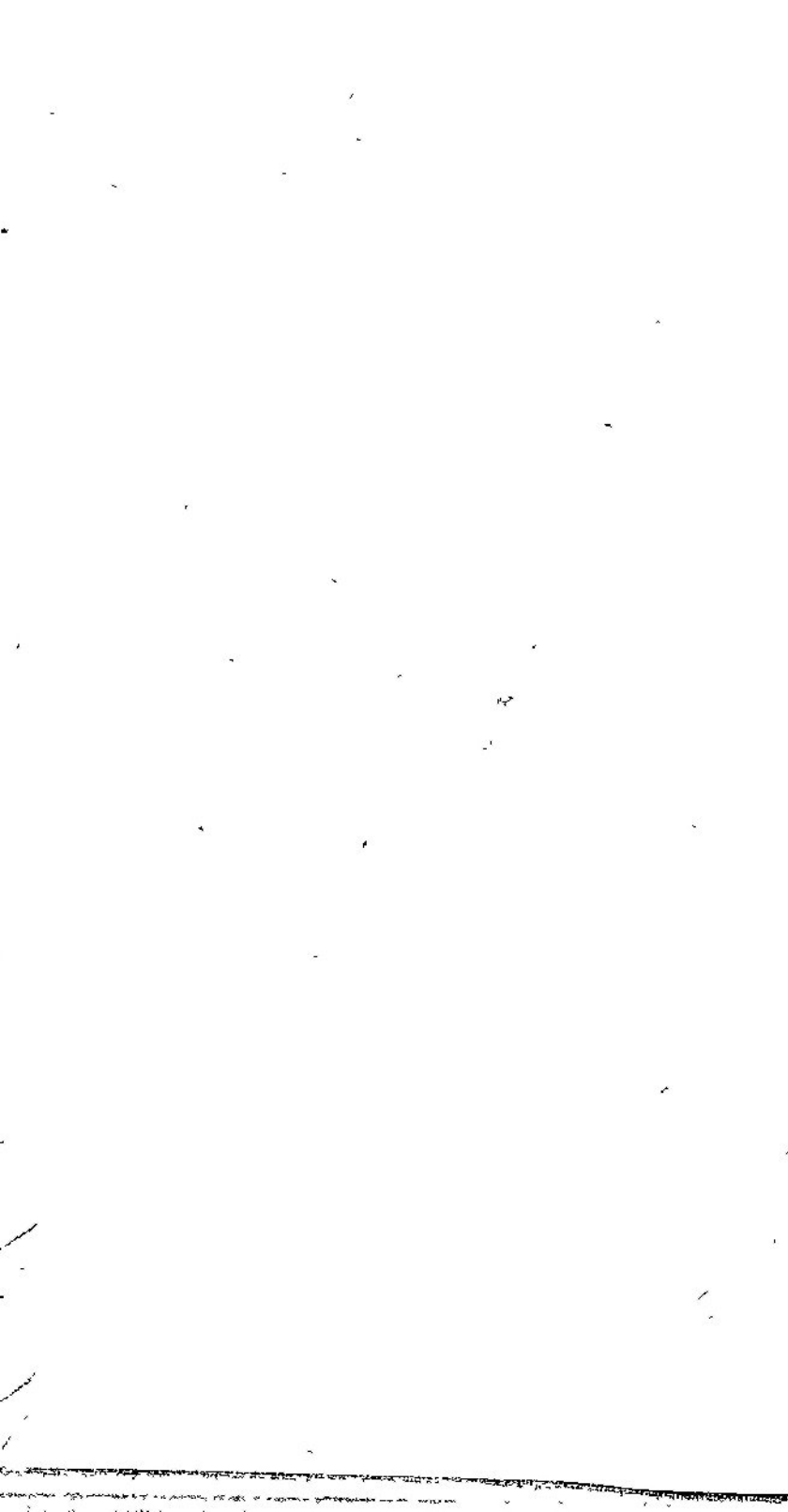


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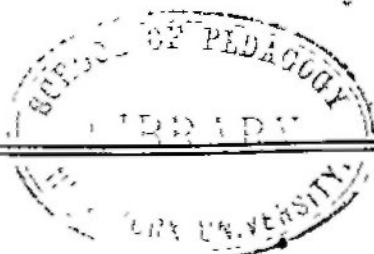




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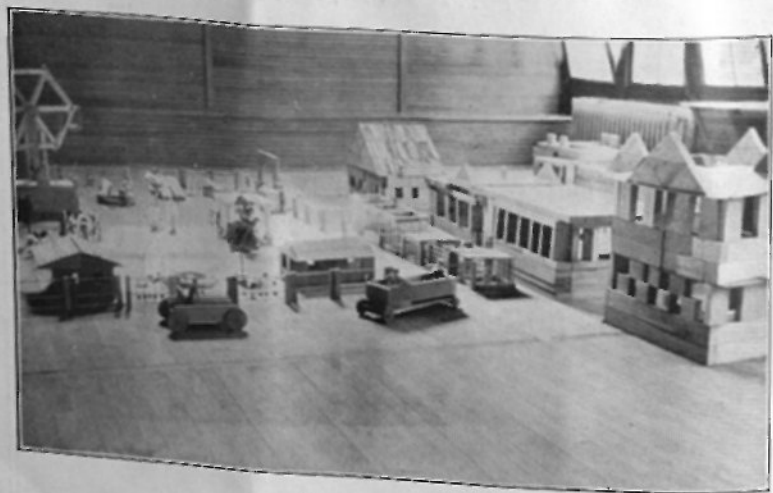
GENERAL SERIES

REPORT OF EXPERIMENTAL WORK
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Mar. 27, 1922



I CHILDHOOD EDUCATION*

By WILL GRANT CHAMBERS,
Dean of the School of Education, University of Pittsburgh.

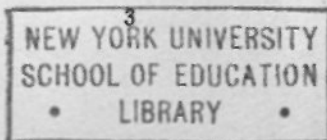
The reorganization of education which has been proceeding actively for the past decade or more, has confined itself almost entirely to the higher levels of our educational system. Whether the reconstruction began at the most vulnerable part of the system or not, it at least has been consistent with the development of our educational system as a whole, which history teaches us began at the top and worked downward. That far-reaching improvement will result from the recommendations growing out of the reorganization of our secondary and higher education, no one can doubt. But that results hoped for will be impossible of attainment until an equally thoro-going reorganization of the lower levels of our educational system has been effected, must be apparent to all who carefully examine the facts.

America is intensely alive today to our educational needs. The awful consequences of our world war point out in no uncertain way the urgent demands for an education which shall fit Americans for American life and shall develop men and women and boys and girls, fit both to promote and perpetuate democracy as the ultimate goal of civilization. But such an education cannot begin in the college, nor even in the high school; indeed it must begin in the nursery to conserve and direct the capacities, tendencies, and interests which are of value in a democracy, but of course without obtruding them upon the child as adult means to adult ends. We cannot hope to successfully engraft an improved and adapted secondary and higher education upon an autocratic and static elementary education. In other words no educational reform in the higher schools can become truly effective until the lower schools shall have had such a reconstruction as will insure the healthy, happy, and natural development of the child as a child, rather than as a prospective adult.

As the period of secondary education is being differentiated into a junior and a senior high school period, each with its characteristic emphasis, so I propose a division of the years preceding secondary education into two periods of somewhat different aims. The period immediately preceding the junior high school may well retain its present name of elementary education. For the earlier period I have proposed the

*Abstract of an address delivered before the annual convention of the International Kindergarten Union at Cleveland, Ohio, May 4, 1916.

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term, "Childhood Education" This period would include what we now know as the kindergarten and the primary grades. It should bridge the chasm between the nursery and the beginning of formal education. It should effect the transition from the complete freedom of the nursery and the playground to the more or less complete subjection of the school. I regret the addition of another term to the vocabulary of educational organization, but the term "Childhood Education" is not synonymous either in its scope or in its aims with any existent term. It is more restricted in its scope, that is, in the years covered, than the so-called "natural" or "organic" education, and it is somewhat more extensive than either the kindergarten or the primary grades.

There are many evidences of the necessity for such reorganization as I propose, particularly so far as it affects the unification of the kindergarten and the primary grades. First of all, it is quite evident that there is no sudden break in the development of the child at six when he passes ordinarily from the kindergarten to the primary grade. His active interests and instincts between the ages of 4 and 7 are much more continuous and homogeneous than those of the child from 6 to 10. Throughout this period he is chiefly a sensori-motor being. His interests center almost wholly about the activity of his sense organs and his muscles, and such knowledge as he gains comes from that same activity. He is not adapted in this period to adult methods of learning, nor to formal or routine processes of any kind. There seems no good reason, therefore, for the distinct break which exists almost everywhere between the kindergarten and the primary grades.

We see a possible explanation for the break referred to in the independent origin of the kindergarten. Starting as it did outside the established school system and conducted largely for its own ends, it was natural that it should become a thing in and of itself, and that it should develop its materials and its methods without reference to other schools. The elementary school, on the other hand, developing from schools above, reflected in its processes the nature of the methods in the higher schools. These methods the labors of Pestalozzi and others have only slightly modified, even to our own day. In the light of those widely separated origins it is easy to understand the mutual suspicion, in some cases hostility, which grew up between the early kindergartens and the primary schools of those days. And the domination of the profession by habit and tradition further explains the persistence of this old estrangement. In spite of the great enlightenment and the rapid progress of the past decade, there are still a few kindergarten training schools which persist in requiring a distinct type of psychology, of art instruction, of history and philosophy of education, from that taught in training schools for elementary teachers, and there may still be found in certain communities primary teachers who prefer to receive their pupils without kindergarten

training. A recent famous survey of the schools of a city which, for diplomatic reasons, shall be nameless here, brought out the objections of certain primary teachers to the kindergarten influence on their entering pupils.

Again, the heavy elimination and retardation, and the high rate of morbidity found almost everywhere in the first year of school life can hardly be interpreted otherwise than as due to a very serious mal-adaptation. This mal-adjustment is both mental and physical. It enforces entire inaction where the child's nature cries out for activity. It represses nascent instincts and coaxes others not yet active. It demands adult information and points to adult goals, while ignoring materials, processes and aims which are fascinating to childhood. The whole school environment suggests the extent to which adult domination represses the natural functioning of the child, and thus becomes responsible for the elimination of those who leave, and the retardation and morbidity of those who remain.

The transition from kindergarten to first grade means in too many cases either transition from complete freedom to complete subjection of interests and activities without mediation, or it means a too early subjection of the children in the kindergarten.

I do not propose in this paper any new philosophy of education, or recommend any radical innovations of method. There is no basic principle in the creed of our School of Childhood which has not received general acceptance by our recognized educational leaders. We are simply trying to bring together these principles into a consistent theory, and thru experiment to discover materials, processes and methods of realizing, rejecting, or revising the theory as experiment may determine. I proceed, therefore, to state briefly some of the principles on which the practice of the School of Childhood of the University of Pittsburgh is based:

1. The aim of Childhood Education should be the normal growth and development of child nature, rather than a mastery of artificial forms or an accumulation of adult knowledge. Childhood is not a harvest time, but a period of germination, as Froebel himself pointed out. We should not expect, therefore, to measure the results of Childhood Education by objective tests and standards, at least not to any considerable extent. Knowledge the child will gain, but that knowledge, such as it is, should be incidental to his natural development; to the pursuit of his interests; to the attainment of his own ends. What we need for the proper direction of child development within this period is an educational biology, rather than an educational psychology, for much of the child's growth is below the surface. It does not rise above the threshold of consciousness, even for the child. The child is much closer to his primitive ancestors than is his teacher. His impulses are more frequently explained

by his animal than by his human nature, and it may be a long cry from the natural activity of these impulses to any bit of human knowledge of which society would approve. The activities of this period should lay a sound sensory and motor foundation for later culture, but these sensory motor activities should invariably be those which are normal to the age of the child, rather than more purposeful and more carefully directed ones which characterize the greater maturity of the adult. The raw material of human nature crops out abundantly in these early years; traits, capacities and powers, interests and instincts, are constantly asserting themselves and demand expression. Their real and varied exercise, even tho it may not lead to any immediate useful goal, as judged from the adult point of view, still promotes the all 'round development of the individual and affords the opportunity for creative variation out of this wealth of experience.

2. Childhood Education should not be regarded primarily as a preparation for later stages of formal education. It should rather promote the present interests and serve the present needs of the children. Many of the children will not live to know any later stages, and those who do survive are entitled to the fullest enjoyment of the present epoch. We are reminded here of Froebel's oft quoted principle, that the best preparation for any stage of development is to have lived the preceding stage most completely. Yet we see everywhere the tendency to push adult aims and means and methods down to the very nursery. It is a habit of society to regard children only in the light of potential adults, and to encourage or restrict their activities only as they promote or interfere with adult purposes. As a matter of fact, the child has his place in society in his own right. He makes his own contribution to the world, as a child, just as really as does the adult. It is, therefore, unfair to childhood to treat it only as potential manhood or potential womanhood. Every inhibition imposed upon the child, therefore, should have for its aim a better ordering of the child's activities for the sake of the child's interests, rather than for the attainment of an adult purpose. Even the restrictions imposed by a daily program may interfere to some extent with the child's development, because the child is being conformed to a set plan not his own, rather than being encouraged to develop along the lines which his nature points out to him.

Yet there is a certain danger involved in allowing the child constantly to determine his own actions. Careful observation has shown that children often tend to function on the same plane indefinitely, unless urged to action on a higher plane. To just how great an extent the suggestion of a teacher may operate in a situation of this sort without injury to the initiative of the child is one of the points to be determined by experiment and observation. It would seem that the wider experience of the teacher should be of value to the child, even in the pursuit of his

own ends, since the tendency of the child to imitate and to accept suggestions of all sorts is as much a part of his nature as is any impulse to action. It would seem that his response to a suggestion which serves his purpose would be as natural as any purely spontaneous act and would, therefore, promote his natural development.

3. The nascent instincts furnish the raw material of Childhood Education. The direction and coordination of activities in the service of the child's organic needs is the immediate purpose. As announced in our bulletin, the instincts which we specially emphasize in the School of childhood are: locomotion, nurturing, communicating, constructing and exploring. These are, as it were, the raw material of character and conduct. Everything which enters into the education of the child should promote his efforts in adjusting means to the attainment of his ends. Such knowledge as may come is incidental and of secondary importance. The mastery of a certain amount of information mapped out in advance is out of the question. The child should make his approach to organized adult knowledge in much the same way as the race rose to the development of scientific knowledge. His early knowledge should be practical, growing out of his efforts at adjustment; related to his activities and his needs. Not until he has accumulated a large store of such practical knowledge will the coordination of his activities in connection with more complex problems prompt him to reflect upon the knowledge already attained, and thus organize it for higher uses. Emphasis on knowledge may have its place higher up in the educational scale, but here the emphasis is on the direction of spontaneous activity, on the organization of actual experience. But, while logical or abstract thought belongs later in education, the beginnings of real thinking may well emerge from the child's adjustment of concrete means to immediate ends in his plays, games, simple constructive activities and social relations. Childhood Education may come to embrace some of the simpler processes of formal education, such as reading and writing. But when these processes make their appearance it should be in response to a demand on the part of the children for such ability as these processes may give in promoting the activities upon which the children have spontaneously entered. Personally, I would have very little concern as to whether a child of eight could read or write or figure, if, throughout the period he has been healthily and happily active, has learned to recognize and analyze his everyday problems, and has learned to take pleasure in the adaptation of means to ends in their solution.

4. The socialization of the child proceeds not thru social adjustment compelled by an adult, but thru the give and take of spontaneous participation in the affairs of the group to which one belongs. As in other school processes, so in his social relations the child is too often expected to measure up to adult standards, to conform to the conventions

and formalities which obtain in good society. If he does not spontaneously fall into the adjustments, artificial inhibitions and stimulations are imposed to enforce his conformity. Such procedure may at times produce a condition which externally satisfies the teacher's sense of the fitness of things, but it is the very opposite of educative in its influence on the child. Instead of making for genuine social development, it promotes social arrest on a comparatively low plane. One of the most serious criticisms urged against the conservative kindergarten of an earlier day—and I fear it is not yet wholly outgrown—was that directed against the artificiality of the social relations of the children. Socialization is a matter of evolution just as truly as any other phase of the child's life, and the attempt to impose social forms in advance of appreciation of social relations cannot result otherwise than disastrously.

5. The only real control is self-control. This, again, cannot be developed by the iron compulsion of an autocratic teacher. One's own will must be active, and, in the immature at least, one's will follows his interests. Will acts when and where it helps in the realization of one's own personal or group ends. The philosophy of our Puritan ancestors, which taught that complete subjection to external authority was the best, if not the only, means of developing self-control in a later period, cannot be abandoned too soon. Living under a Russian Czar is not the best preparation for citizenship in American democracy, nor is constant subjection to the will of a teacher a reasonable preparation for self-direction as an American citizen. In connection with this principle I have frequently met the objection on the part of teachers that a child will never learn to endure hardship, to struggle with difficulty, if, in school, all his activity is self-initiated and self-directed. We have no evidence on the other hand to show us that a child subject to constant compulsion will face a hardship or struggle with a difficulty any more heroically, once the compulsion is removed, than a child who has been the creator of his own will thru self-direction. The old psychology encouraged us to believe that the will is a higher power opposed to the natural instincts and impulses of the individual, which together form his lower nature. Present-day psychology teaches that the will is built up by the progressive coördination of the instincts and impulses used as means in the realization of one's aims. Not compulsion, therefore, but daily experience in the use of one's native powers and capacities, in the realization of his own purposes, will insure the ability to endure hardship and overcome difficulty. The ends which one sets up for himself are much more alluring and will hold one to more persistent effort than goals determined by persons or conditions outside the field of one's own interests.

6. Originality, spontaneity, invention, call it what you will, a virtue of prime importance in a citizen of a democracy, is always the outcome, not of prolonged and painstaking drill, but of a full, rich, absorbing, and

well assimilated experience. Wherever we find a spring bubbling up in the open plain apparently in violation of the law of gravitation, we may be sure that somewhere in the background there is a saturated hill in which the spring has its source. Likewise, whenever we find an original idea, an improved adjustment, we may be sure that this new thing has emerged from a saturated experience. Childhood Education should have for one of its chief aims the saturation of the child in the more primitive forms of experience. I believe, therefore, in the cultivation of all his harmless instincts; in the encouragement, rather than the repression, of his spontaneous activities; in his exposure to, and his reaction upon, as great a variety of simple perceptual experiences as possible. But thru it all the child should be leading his natural life, following his spontaneous promptings, rather than submitting to formal drill in sensory motor activities such as we had in the old-fashioned object lesson, and drills in sensory perception, such as we find in use in some of the present-day kindergartens and Montessori schools. Mere contact with material objects does not make education concrete. It is the natural reaction upon the object which makes an experience concrete.

7 Viewed from the standpoint of later stages of education, Childhood Education should, therefore, enrich the experience of the child, develop his interests, thru first-hand reactions to his immediate environment, and determine the motives for future educational efforts. One perceives, remembers, thinks, and acts best in his most familiar field, in the enjoyment of his own interests, in the solution of his own problems. Therefore, the real beginnings of the child's intellectual life emerge from the adaptation of means to ends in the use of concrete materials, in the solution of problems. The motives for formal education—motives strong enough to carry the child thru the drill and monotony of the school grind—should grow out of the realization that he has reached his limit in the exploration, interpretation and mastery of his environment with his present knowledge and skill. To get further he must know more, and to get to the sources of knowledge first hand he must master the tools of learning. Learning thus becomes a personal matter and appeals to his feelings and to his will. Thus gradually he is brought in a perfectly natural way to undertake willingly the mastery of the tools of knowledge when the same activities would have proved repulsive to him if presented independently of the necessities growing out of his own natural activities. Formal drill on subjects for their own sake has no place in Childhood Education. The child may learn to read and write and cipher, and he may accumulate a large fund of interesting knowledge, but only as desired means to the attainment of ends which have developed naturally within his own life.

In conclusion, then, we cannot over-emphasize the importance of keeping Childhood Education free and spontaneous, of adapting it to the

natures of real children and not to set theories about children. We must keep our eyes on the children actually before us, rather than on the books about child life in our libraries. We are so prone to react to a theoretical child, even when the real child of flesh and blood is before us. This implies that the selection of both the aims and means of Childhood Education must be made from the lives the children themselves. It means the use of materials to the manipulation of which the children are impelled by their developing interests and powers. It means the avoidance of complete domination by the teacher on one hand, and of the uncontrolled lawlessness of the children on the other. Enforced action has no value for intelligence. Intellect is organized by action only when it leads to a projected end. Above all we must resist the universal tendency of all educative agencies to become formalized, to drop into a smooth running routine, to allow the initiative of yesterday to become the habit of tomorrow. Those greater than we, even Pestalozzi, Col Parker, and Montessori, and many of the ablest disciples of Froebel, starting with the most sacred conceptions of child nature and the finest ideals of the value of freedom, have gradually permitted themselves to fall into a routine which in the end did violence to the very ideals on which their educational practice was based. Hence the need for a continual renewal of our educational doctrines. Hence the demand for continuous experimentation in the field of Childhood Education.

RELATION OF THE KINDERGARTEN AND THE PRIMARY
GRADES IN THE SCHOOL OF CHILDHOOD OF THE
UNIVERSITY OF PITTSBURGH*

By MEREDITH SMITH, Head of the Department of Childhood Education.

With this question of relation of kindergarten and primary grades is bound up the problem of so correlating the work of both as to make the education of the early years a more consecutive process, one which eliminates the break in education at the period of promotion from kindergarten into the first grade. We all know there is no marked change in the child of six years. He has the same impulses and tendencies and about the same capacities and powers as the child of five years. The same principles should determine and govern the education of both.

In our School of Childhood in the University of Pittsburgh we have not considered particularly the problem of the relation of the work of one grade to that of another. We have been very deeply concerned with the problem of the relation of education in each particular grade to the child, his impulses, capacities and needs. If the child is a growing, developing organism and if the work of the school is adapted to his needs at each stage his education as he passes on from one grade to the next must follow a process of continuous development.

The attempt has frequently been made to work out a solution to the problem of relationship from another standpoint. We have expected teachers in kindergarten and first grade each to become acquainted with the work of the other to the end that the primary teacher may carry over into the first grade valuable phases of kindergarten work and the kindergartener, recognizing the needs and demands of the primary school, may prepare her children to meet them. Sincere and earnest efforts have for many years past been made by kindergarteners and primary teachers to solve the problem from this standpoint, but the results achieved have somehow not met with the success anticipated. It has often happened that primary children have been engaged in occupations so nearly similar to those that occupied them in the kindergarten that their developing capacities and abilities have not been fully called into exercise and a consequent loss of development of power and skill has been the result, as well as loss of interest; on the other hand there are kindergarteners desirous that this work shall be an adequate preparation for the primary

*This address was presented before the Kindergarten Section of the N. E. A. meeting in New York City, 1916.

grade who are making an attempt to introduce their children to the elements of reading, believing, with their limited number of children, they may accomplish it in a more effective way than is possible for the primary teacher. While these attempts, we must agree, have on the whole wrought may accomplish it in a more effective way than is possible for the primary school, as a means for bringing about such a relation between them that permits children to progress naturally and normally thru these early years, the changes have not been radical enough to be really effective. There is still the great break between the two in respect to equipment, method, subject matter and discipline—tho in many primary grades the children are as free as they are in certain kindergartens.

If we could unitedly center attention on this problem of the child, his nature and needs, and the means best adapted to satisfying them, and direct our effort toward its solution, I believe, we would not only find we were solving the problem of the relation of kindergarten and first grade, but we would make progress more certain and bring about a more rapid reconstruction of childhood education. This would imply on the part of kindergartners and primary teachers the recognition of a common psychology, common educational aims and principles. Psychology is a comparatively recent science and many believe we have made a mere beginning of the understanding of the human mind and its processes, but psychologists have told us enough about child nature to give us a basis, at least, for reconstruction of early education. We know children are essentially active beings, that the period of childhood is preeminently the time when they are interested in doing and making. It is the time when they are educated thru and by means of their activity. Kindergartners have recognized these facts and they have, as part of their equipment, a wide variety of materials, blocks, dolls, clay, sand, trains, hammers, nails, etc., which make many forms of activity possible. The use they have made of these, we cannot say, however, has always been in accord with child nature. The kindergarten furniture is not stationary so that floor space is available when needed. But the primary teacher is not so provided. She may have clay, possibly a sand table, pencils and paints, and of course books, but this is, as a general thing, the limit of the material provided for her children. In such a situation how can she adjust her work to the child's needs and capacities? In our attempt to work out a scheme of education adapted to child nature, we have found it necessary to equip our first grade with even more material and a wider variety of material than is provided for the younger children. They are older and they need more to carry out their ideas. They have as much available floor space as the younger group and they keep it nearly covered with their constructions most of the time. The absorption of the children in the work, their joy in it and the results achieved lead us to feel we are on the right track.

Another great handicap to the primary teacher, we have found, in adjusting the education of the first school year to the children's needs is the absolute necessity imposed upon her to teach all the children to read before the end of the year. Reading has very little relevancy, it seems, to the activities of the child of six years or to his mental needs. Interest may be aroused in a more or less artificial way, but it is generally independent of other interests of child life. Some one will say very truly, "But children want to learn to read." The traditional idea that reading holds the key to enlargement and enrichment of life is passed on to children. Learning is identified with acquiring ability to read and children come into the primary grade eager to learn. So it was with our children. They did not care so much at first for the material but asked for reading. It was enlightening to see the change of interest as the possibilities of the constructive occupations opened out before them. They became more and more absorbed in working out their ideas and had less and less time for reading and soon ceased to ask or care for it. The vision of a child, psychologists tell us, is adapted essentially to seeing large, moving and somewhat remote objects in the mass. They are warning us of the danger to the child of undue nervous strain consequent upon this effort at so early an age to make the fine and accurate adjustments of the eye necessary in following printed or written words. The age of eight years seems to be considered early enough for a child to give more than incidental attention to the written language forms. While our primary children at the end of this first year recognize only a comparatively few words, with the exception of one child who learned to read without special instruction or effort, and probably at the end of the second year will not be able to read as second grade children do, at the end of the third year, I believe, they will read as well as children of their own age and will have a better appreciation of books and better knowledge of how to use them to get what they want from them. But of course this cannot be determined for another two years.

It is my belief that we will never have an education for young children which permits of a gradual, natural and continuous process of growth until the primary teacher is relieved of the burden imposed by this demand; not but that children may learn to read between the ages of six and seven years, if they choose, but it will not be considered the primary duty, the one thing essential that first grade children spend the greater part of their school day on drill in reading. That this emphasis on reading in the early years should be so great and so wide-spread must have some reason or justification. In an article published in the *Forum* in 1898 Dr. Dewey shows that this emphasis is the result of adjustment to past conditions—to conditions, however, which do not prevail today. At an early period in our history ability to read and write was the sole avenue to knowledge. The environment of our ancestors was crude and

undeveloped, and recourse to the achievements of civilization could be had only by means of books. Reading implied ability to rise above the narrow and meager surroundings and to share in the intellectual resources of the race. It marked the distinction between the educated and uneducated. Since that time conditions, social, industrial and intellectual have undergone a very radical change. Our immediate objective life is so permeated with the values of civilization we do not need to go to the past for enrichment. In the experience of almost every child today the manifestations of the intellectual life of the race are direct and obvious. The automobile and railway train, over-sea and under-sea transportation, travel thru the air, long distance communication over land and sea, all the modern inventions and discoveries with their application to industry which have reduced human toil and increased human comfort and enjoyment, fill life with the marvelous, uncomprehended and mysterious. Products from the ends of the earth are at our very doors and for one cent we may read events happening all over the world. Progress has been so rapid few adults have been able to master knowledge regarding what is most significant and obvious in our everyday life. How many grown people comprehend the mechanism of the automobile or understand how it is possible, that by turning a button in the wall they may flood a room with light? Science and industry have so modified our environment that it is full of wonders that read like a fairy tale. There is nothing in the past comparable to it, and contemporaneous with this materialistic development is the social and political modifications taking place in the world.

All these things make it possible, as Dr. Dewey says, to initiate the child from the first into a direct contact, not an abstract and symbolical one, with the operations and forces, material and spiritual, which underlie and determine our present social life. The processes of production, transportation, consumption, etc., which are most significant in our social life may be reproduced by children in a miniature way. In their spontaneous play they do this to an extent but as an educational agency with direction and proper management it has possibilities that have not begun to be realized. Such reproductions played by the younger children are of the simple activities of the home and immediate neighborhood, furnishing and caring for the play house, providing for the needs of the dolls, buying and selling, visiting each other, etc. Our younger children are supplied with large blocks, five-inch cubes, bricks ten inches by five by two and a half inches, and divisions of these, so that they may build stable houses large enough to live in, sometimes with roofs, often with walls only a foot or two high. In these they relive the life they see about them, assuming obligations and responsibilities in play that they are not afforded in real life. The experiences of the primary child are wider and their constructive work developed along the line of reproductions of city and

country life. With development we find the objects made become smaller, allowing for greater complexity and detailed representation. So we have different sets of materials for these children.

In the work of the primary grades, as well as that of the younger group, the children largely determine their own ends. There is guidance and suggestion, of course, but they are carrying the play on themselves. They suggest a great deal to each other. For example, one day some one said, "We ought to have a hospital," and a group of children took up the idea, erected a building and equipped it, making beds for the patients and tables on which were placed boxes of clay pills. They had a store room filled, it seemed to me, with everything that could be shipped there—barrels of apples, oranges, etc. (Hailman beads), sacks of flour, meal, etc. As they were working on it one of the children said: "We ought to have some place to buy beef tea and other things for the hospital." And in time a drug store was built and equipped. Another day it was said: "We ought to have a fire department, these buildings might take fire." Two or three boys took up the suggestion, built the fire engine house, with apartments upstairs for the firemen, constructed an engine, made ladders and completed it all just in time to put out an imaginary fire in one of the buildings. Later many of the children became interested in reproducing certain phases of country life. They built barns with a hay loft and pulley and string to draw up the hay. They made bins for their corn and hauled it in wagons to the train, which carried it to the mill. Sacks of meal were then shipped from the mill to the grocery store in the town. These children all had broken bits of experience regarding farms, farm products, etc., and this play helped organize the knowledge they had and enlarged and made more definite their conceptions. They went to their store one day, bought meal and made corn meal mush for luncheon. In the same way their knowledge of the process involved in the ability to send mail from one place to another was enlarged and organized. Every child knows mail may be sent to and received from friends and relatives at a distance, but after the children had built a post office, constructed post boxes, made and sold stamps, and sent and delivered mail, they had gained a grasp of the significance of the social situation they did not have before.

In connection with these plays children should have the opportunity to enlarge their experiences by excursions to museums, parks, public buildings, to every available place of industry, and to the country, or, if country children, to the city.

Compare the wealth of subject matter introduced in the process of such experiences with the poverty of the contents of the first and second grade readers. However, I realize, even though possible, it would not be wise to make a wide-spread radical change at once, but it would be significant for education, it seems to me, if we could have a wider introduc-

tion of proper materials for constructive work in the first grade and have reports made of results.

These activities not only furnish insight into the social conditions and industrial occupations which lie at the foundation of society, but they preserve a sense of the dignity of work so necessary in a democracy; and they also by demanding steady and orderly application of the child's powers and abilities strengthen habits of attention and industry. From the free social contacts permitted they learn how to adjust themselves to other people and to coöperate with others for the good of all. On the side more distinctively of mental training these children are acquiring control of the method of experimentation which, with certain regulations regarding observation and verification, is the method of science. It is the method by means of which human beings gain access to the new, the unknown. It is the method we all must use in any new or problematic situation, if we are exercising control of experience, making adjustments in a thoughtful way.

Scientific method was not known in the time of our forefathers save by a few specialists, consequently reliance upon authority was necessary and inevitable. But now it is in general use and it is freeing us from the dominance of the past. It is not only consciously applied to material things, but to problems connected with our social life as well, to industrial conditions, to municipal affairs and to all phases of human relation. It is the very keynote of education at the present time. In every field it is scientific experimentation which marks the evidence of progress and development. When analyzed we find in all experimentation an element of inference. From something observed, something known or believed, an inference is formed regarding what will be, or may be brought to pass. It is by means of this ability to look ahead, to anticipate possible results of action that we gain control of experience and are not left to the mercy of the immediate, of habit, or instinct as an animal is. As we cannot be certain in advance that what we infer will come to pass, all inference and, consequently, all thinking, involves risk. Training and experience are necessary to make it accurate and reasonable.

If this is a method so significant in our modern life that progress is dependent upon it and if training is necessary to make it trustworthy, would it not be the part of wisdom to expect education to make some provision for it especially when it is a method children may become acquainted with and use? They are using it all the time in their spontaneous activities, but before Dr. Dewey's analysis of thinking we failed to recognize it. A child building a barn, when perhaps he has never seen one, infers from buildings he has seen that shelter for an animal would be of a certain kind. As he works out his ideas and gets the consequences of his endeavors, he tests the reasonableness of his inferences and thus develops power of judgment. In all constructive occupations,

where children are thinking and planning for themselves, the process is one that involves purpose, anticipation or foresight of possible results and testing. All that the scientist does, more than these children are doing, is to observe more widely and minutely what is going on that he may select more carefully his data for inference and check up more accurately his conclusions. The child's ends are play ends, but nevertheless this habit of conceiving ends, of making inferences and of executing purposes is being formed and increasingly his inferences will be based on wider experience and greater knowledge, his judgments become more reliable and his testing more accurate.

It is this ability to foresee possible consequences or events and to execute purpose which makes for efficiency in our social life. Of the late James J. Hill it was said, as particularly indicative of his success, that, "He was a man who unerringly sensed the future," and that all his life long he was a man of action. These are the qualities also essential to a democracy. We are just beginning to realize in this country, what certain other countries have long known, that education may be and should be made a national asset. Our national development depends on individuals of vision, who can conceive conditions more desirable than those that exist and who have ability to utilize the means necessary for their realization. In other words we need leaders who will be able, not merely to act on events when they arise, but who will be able to foresee, from the trend of present affairs, future possibilities and will then be able so to guide events as to further the desirable and decrease the possibility of undesirable consequences. Our distinctively American attitude is a happy-go-lucky confidence that things will turn out all right somehow and we consequently go stumbling along in a hit and miss fashion when, with careful examination of the facts at hand and the use of reflection, that is, with scientific experimentation, we might guide the development of our social affairs more definitely along lines that make for progress.

If education has any influence at all it will make a great difference in our social life, whether children are trained in the attitude of passive unquestioning acceptance of authoritative material, mastered by a process of memorization under conditions of external control or whether they are trained to think and plan for themselves, in situations where they are receiving the natural consequences of success or failure which follow the execution of their ideas, and where knowledge acquired and skill developed in the process make it possible to conceive and execute ever more adequate ends. It seems a far cry from the education of a child to the development of democracy, but the analysis of the mental processes of child and adult, and the increased understanding of the educational significance of play in all its phases is making us realize, in a definite way, what has long been claimed, that the education of childhood has a direct social and national bearing.

REPORT OF THE EXPERIMENT IN PRIMARY EDUCATION IN
THE SCHOOL OF CHILDHOOD OF THE UNIVERSITY
OF PITTSBURGH*

By MEREDITH SMITH, Head of the Department of Childhood Education.

The keynote in Education in this country today is experimentation, discovery, search for new and better methods and equipment, and more adequate subject matter. Every place of Education is gradually being touched by this conception and there seems reason to believe that the near future will see many radical changes taking place.

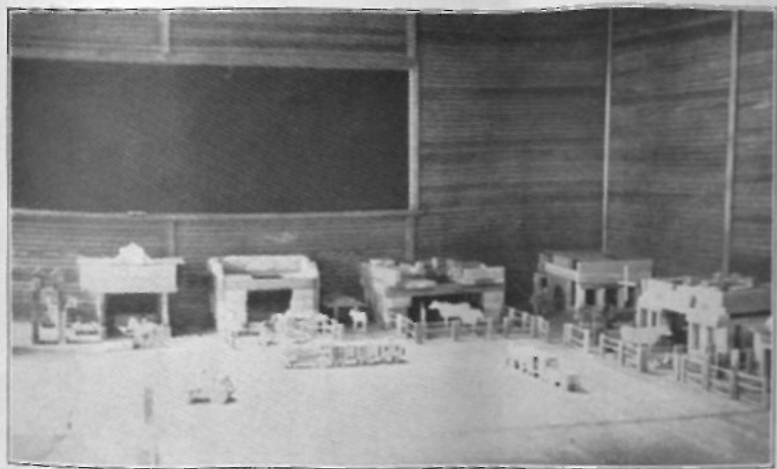
In the School of Childhood in the University of Pittsburgh we have an unusual opportunity for making an educational experiment. In the first place we are free to carry on the work in the way we believe best, unhampered by a ready-made course of study or by the necessity for making the work of one year a direct preparation for that of the succeeding, thus attention may be centered on the needs of the children at each particular period. The School is small and there are no purely administrative problems or difficulties that must be taken into consideration.

In the second place the Faculty of the School of Education share in the responsibility for the success of the work that is being carried on. Members of the Faculty visit the school and aid in helping check up the practical results. Aims and methods, as well as the actual work of the school, are discussed, analyzed and defined in Faculty Conferences.

In 1913 the work with the younger group children from four to six years of age was instituted under the direction of Mrs. Sies and is now in charge of Miss Waite. This year the School has been enlarged and we are working on the problem of the primary grade. Our plan is to carry the children on from one year to the next in the endeavor to work out a consecutive scheme of education.

The aim is not to impose on childhood adult knowledge and accomplishments, but to afford children experiences that appeals to them on their own account and which at the same time have educational value and significance. The school situation is one in which things are being done and a form of activity carried on that is continually demanding the exercise of the child's own initiative and power. School studies find

*This report was presented before the National Council of Primary Education meeting with the department of Superintendents at Detroit, February, 1916.



IN THE COUNTRY



THE CITY STREET

their place in this scheme as the means by which ends may be more successfully and effectively realized.

The material that constitutes school studies, Dr. Dewey has shown, originated in experience; it grew out of the problem that came up in relation to what people were doing, the activities they were carrying on. In guided, educational play we find the same thing is true in regard to the experiences of children. Reading, writing, number, phases of physics, nature study, geography, etc., appear in their experience and have significance and meaning because of the relation thus afforded to social life and to human wants and needs. It seems to me true, as has been said, our mistake in education is that we are giving children subject matter that has been abstracted from experience, organized in a logical, adult way, and we are expecting them to master this ready-made material just as it stands, unrelated to any use or purpose which it may have. These things have value to adults only in so far as they assist us to attain our ends. When we get school studies back into experience where they appear as means to desirable ends we give children motive for acquiring them and thus facilitate mastery.

Where things are being done we believe there must be material provided to do with. To meet this need the primary room, as well as that of the younger children, is supplied with larger floor blocks, peg-lock blocks, trains, dolls, hammers, etc. We have a fair amount of floor space which the children keep about two-thirds covered with their constructive representations the greater part of the time. They preserve what they have made from day to day adding to it as they more fully work out their ideas. Just now they have what they call the City of Pittsburgh with its houses, stores, an apartment house and all the play and incidental construction work that goes with it. Each child has an occupation of some kind that he is engaged in, building construction, housekeeping, manufacturing, mercantile business, railway and steamship construction and management.

Very early in the midst of these experiences the need for money as a medium of exchange arose. The price of tickets for the steamship were one dollar, or fifty cents, according to the location of the seat in the bow or stern of the boat. The children made their own money and incidentally learned to make numbers. Some writing was necessary in making the tickets and also in labeling the articles in the various stores.

The problem of transportation was one that absorbed a great deal of interest and attention. The question of how certain things are packed for shipping was considered and we found it necessary on one occasion to telephone to a grocery store to verify our experience and to get further information. Barrels were made for pumpkins, apples, etc. (Hailman beads), and sacks for flour, rice, coffee, nuts, etc., which the children brought from home. As the packages brought were opened and exam-

med they led to talks of how different products grow, where they come from and into various phases of nature study. The sacks had to be labeled to enable us to identify the contents, thus making further need for writing and consequently reading. The children decided on a label one inch by two and cut these out with the aid of a ruler.

One morning a store keeper was urging the railway manager to send up the supplies lying in the station which she had ordered, but he persisted in an attitude of indifference and inattention which was finally accounted for by his statement: "You can't talk to me, I'm 5,000 miles away." The question was asked: "How can she get word to you?" He replied: "She will have to telegraph." Two stations with telegraphic apparatus were constructed, thumb tacks being used for keys. The message was sent and in due time the supplies were delivered.

Dr. Dewey has analyzed reasoning as a process which takes place when in the pursuit of ends which present some difficulty we form an inference or hypothesis of possible means of solution and acting on the basis of that inference verify or nullify it. This is the method of science, the method of progress, of getting at the new, the unknown. It is the method that is applied not only in scientific discovery, but in every experience in which human beings are adjusting themselves to new situations, or in which they are attaining new ends or purposes in daily life or occupation.

In play of the character our children are having they are given experiences which make a continual demand for the exercise of reasoning or reflective thought. A child's ends are different from an adult's and his control of means is slight, but his mind acts in the same way and is developed by the same process. When a child who is endeavoring to construct a water tank for his engine says after search: "Oh, this book will make it," he has formed a hypothesis for the solution of his problem. As he acts on this inference he tests its worth, checks up the reasonableness of his conclusion and thus develops his power of judgment.

It would seem from the prevailing scheme of education that we assumed that the child's mind was of a very different character from the adult's, that it had somehow a peculiar power of absorbing a wide variety of facts of knowledge and of storing them for future use. A large part of this knowledge we know is forgotten, much of it is of no value to children or adults, and phases of it become obsolete by the time the child is grown, yet he may hesitate to eliminate any of it for fear, perhaps, he will not be as cultured as he might have been.

Normal adults can at any time gain new facts of knowledge they may desire, but mental habits and attitudes once formed are difficult to break. It is upon the formation of efficient mental habits and attitudes, I believe, we should focus attention, for with this development acquisition of knowledge will take care of itself. Even tho a child's ends are

play ends this habit of initiating ends, of forming correct inference and of executing purpose is being formed, and increasingly his ends will be more complex, more remote and thus require greater organization and control of such means as reading, writing, number, etc., for their attainment. Under guidance after having found a need for the school arts the children abstract these from experience and enjoy practice or drill on them for the purpose of developing skill.

We are trying to train our children in the University to be resourceful and inventive, to develop in them power of initiative, ability to conceive ends that are desirable and mastery of the means that make efficient attainment possible. Each child's action is in the main directed by his own mind, not another's. This does not mean that the teacher is not guiding the situation, but she does it by means of suggestion which makes her guidance just another of those agencies from which children are continually gaining suggestion for activity they choose to carry on. Her's should be more educative because designed for that purpose. I think we fail to realize to how great an extent in the majority of our schools today the child's activity is governed by another mind, by rules and regulations he has had no part in establishing and for which he sees no value. He may not even speak or leave his seat without permission. One is reminded of Rousseau's warning to the parents and teachers of his day: "You will stupefy him by this method," he says, "if you are always directing him, always saying to him, go, come, stop, do this, do not do that. If your head is always directing his aim, his own head will become useless to him."

Besides the intellectual development offered by this kind of experience where children are freely playing and working together there is opportunity for real social development and training. The children recognize the need for adjusting themselves to other persons if they would successfully attain their own purposes and they learn how to cooperate with others for the advantage of all. The freedom of movement permitted, the lifting and carrying of blocks from one place to another, together with the use of the apparatus, of which Mrs. Sies has published several articles, afford opportunity for physical development and bodily control.

Our children will not be able to read as other first grade children do, but we believe they are gaining what is of more value to them, not only in their present life, but in respect to the formation of mental and social habits and attitudes and the development of physical health and power that will be of more worth to them in the future.

This postponement of drill in reading for a year at least will, we believe, facilitate mastery, making its acquisition possible with much less strain and loss of time.

THE LENGTHENING OF THE SPAN OF ATTENTION AS ILLUSTRATED BY TWO PLAY SERIES IN THE SCHOOL OF CHILDHOOD

MARY G WAITE, Assistant Professor of Childhood Education.

One of the most obvious characteristics of little children's interests is transitoriness. When a four-year-old child enters the School of Childhood he is apt to flit from one piece of apparatus to another, touching everything and exploring every nook and corner in the cupboards, examining everything that strikes his senses. After a few days the great wealth of play material becomes a familiar setting for real living and he begins to select materials that will serve a purpose. Later in the year these purposes or play problems may necessitate the child's holding an idea for several days and putting himself thru a great deal of drill for the sake of the accomplished fact or finished product.

Out of many plays that were built up during the past year at the School of Childhood two have been selected because of their extreme difference in objective form, while being alike in expressing a group experience and illustrating the idea that with the development of a purpose comes a corresponding power to hold to this purpose.

I.

THE HOUSE BUILDING

Our records show that the large and small building blocks were used from the beginning of the school term. The two-inch cubes and the bricks, 1x2x4 inches of the enlarged Froebel material were at first used about as much as those built upon the 5-inch scale. The work with one set was encouraged just as much as the other for the Play Leader feels that each answers a specific need in childhood education.

As is usual in kindergartens we found the first activities to be piling, singly, in rows, and in honey-comb rows. But soon this passed over into the beginnings of purposive activities.

We have several iron trains of cars and the first buildings were platforms and stations in connection with these, rather than in connection with the house plays. The latter was merely a piled up mass of small bricks and the platform a long row of the same blocks placed side by side. This was the work of two children, one the undoubted leader and the other an under-developed child who put in only a few bricks and these so badly that the child leader asked him to stop. Altho only

two children attempted to build, many used the station during the day. A great many near imitations developed during the next few weeks, changing slightly but surely to better forms as the image cleared up and skill developed thru the play use of this material. During this time there were many days when other interests were dominant and the blocks were not used at all.

The first building with an interior was a car barn, a long narrow affair with a covering over it and an opening at one end. To get the cars out it was necessary to take the roof off and to guide the cars so that the walls would not be pushed out. This type of building was used for two weeks and was made of the small blocks. Meanwhile a fire department house was built of the large blocks in the same way except that there was no roof as the children themselves were the horses.

One day while the children who were building the fire department had left it for a slide, D. came along with his train and found a new barn, which was a delight until he was evicted by the owners. He immediately made a similar one of his own, which, altho exactly like the one of the small bricks, was big enough and strong enough to allow the trains to go in and out without being torn to pieces.

This was about the middle of November. Up to this time simple piling had been going on, and about the same time one child discovered the possibility of having two stories by using the boards. From then on the buildings were of a very different character. The problem of size, principally size of enclosure, had been suggested. None of these buildings demanded more than a few minutes' time for completion even when the children carried the blocks forty feet from the place they were kept to the place they were to be used. The child's problem, like the adult's, was, to make in the shortest possible time the thing that could be used for his purpose. At first it was a mere representation of the object, then gradually the knowledge of the possibilities of the materials, and clearer ideas of the problem brought the desire for the reality in the product.

Early in the autumn the homes for the house plays were separated enough by a row of chairs or a chalk mark on the floor, but in November the homes were made much as were the fire departments, that is, outlined with a row or two of blocks. The idea of a house for a home developed just as did the idea of the other buildings, and the middle of November was the time of the first great climax.

One day M. started to build a wall between her home and another child's. She made a corner in it that was not tight. After looking at it she put the third side on very carefully so that the corners joined closely. These walls came up to about her shoulder and with a roof on there was just room enough for her to squeeze in and sit down. Some of the children came to call on her and each looked thru the window

as they called the crack. The next day they decided to build a house big enough to have company in and about 10 or 12 started to work. This house had one long crack about four inches wide on one side, none in the other two and the fourth side was the door. Two children could sit down in it and for several days it answered the purpose of a place to play: "I've come to visit" Soon the darkness of the place gave the problem for the next house. The children stated they would have more windows. They did. Every brick was put far enough from every other brick to insure that. But this, too, satisfied their idea of a house until another problem arose. The children found out that if they could see thru a hole they could poke things thru it.

The group talked over the problem and here was the first time deliberate group planning came into the work. It was nearly a week later, tho, before the plans were put into execution. A space was marked on the floor with chalk and covered with blocks. There was a good deal of planning for the door and window spaces and it took the major part of two days to complete it. All the children worked on it at some time or other each day, but none spent the entire day on the problem. The house was duly painted with water and used for several days. It was taken down because it was nearing Christmas and the space was needed for other preparations. Several similar houses were made during the winter, all for a purpose in house plays or store plays, but none showed any great advance over it in problem value until one that was made in April.

In planning this house the children said it should be large enough to take in the gymnasium mat for a rug. The rug was measured and found to be three by five feet. One child said: "There must be a border space all around it." As they could not decide which way the rug should be placed in the house the house was to be made seven feet square. Then came the question: "How many blocks long is seven feet?" The Play Leader said: "Seven feet is eighty-four inches." H. said: "You can't tell how many blocks it takes 'cause it hasn't an 'O' on the end." F. said: "If it had another inch it would be eighty-five inches and five is the half of ten." "Yes," said the Play Leader, "how many would that be?" She repeated eighty-five two or three times, emphasizing the eighty. "Oh," said F., "eight and one-half ten-inch blocks." H. said: "Eight bricks and a cube." So this house was built to measure. The children often went to the board, read the sign: "7 ft. 1 in. equals 85 in—8½ blocks," and went back to count the blocks in their row before bringing more. They also measured it many times to be sure 8½ blocks did make 7 ft. 1 in. This house took two full days to build and every child helped. After it was completed it was found not to answer the purpose of a place to watch the boats because there were not enough windows on the side where the boats went by. So a part of the wall

was torn out for another window. During the building we had suggestions for the improvement of the boat play, when it would be taken up again after finishing the shelter house.

2.

THE BOAT PLAY

This game began early in the year as a pure activity game. The children were jumping from the spring board onto the gymnasium mat and pretending to swim back so as to jump again. As one child drew himself up he said: "I nearly tipped the boat over that time." The Play Leader answered: "We must be very careful when getting in and out of boats." From then on for many days the spring board was "The Boat."

Early in November two boys were playing boat by going down the slide seated on brooms, when one said: "This boat goes very fast," and another said: "A really boat would go faster. I wish we had one. What could we use?" The Play Leader said: "Would chairs, tables or blocks help?" "Tables would," said H. Each then took a small table and turned it upside down and began using the brooms for oars. One by one all the children joined in the game. After a few minutes V. said: "If we turn the tables up the other way we can play the air is water and make the oars go down deep." Several accepted this suggestion. One child, as he climbed up, said: "This isn't a boat. It is an aeroplane," and began swinging his broom at full length, using the ball and socket joint of the shoulder. The upright position of the table to represent a boat did not coincide with their image of a boat, so it was eliminated.

The next day the children talked of the boat play at lunch time and could hardly wait for the tables to be cleared before turning them over. The Play Leader suggested to the assistant that she begin playing some music for the rowing rhythm. At first the children paid little attention to the music, but gradually began rowing more evenly until they were in rhythm, using their entire body from the waist up. When the music stopped J said: "Now it's time to row back," and turned around in his seat and began rowing in the other direction. But the musician did not commence to play. After about three-quarters of a minute one child looked around and noticed the lack of rhythm and called: "Miss R., you better play for us. We go better that way." This game continued to be a great favorite in this form for about two months.

In January one group was playing boat and another was playing "being fish," when spontaneously the two games merged into one. The boatmen caught the fish on the end of their lines—another use of the broom. Unhappily for one fisherman he caught a crocodile, which began to eat him up.

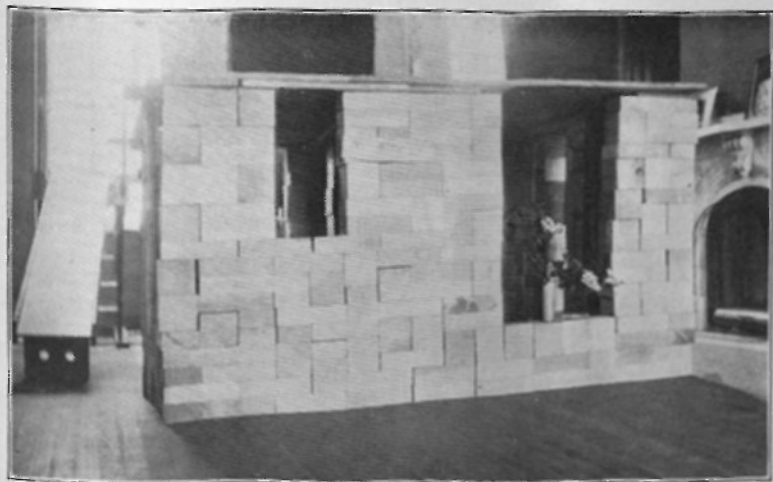
The group was then called together for consultation and it was decided that we would not fish where there were crocodiles, whales or any other big fish, and that in this game the fish should be pretend fish. The question then arose as to how we would know when we had a fish on the line. Miss R. happened to be at the piano playing for a group of children and began a trill in the bass. "There," said E., "that's the fish biting the bait" So the game went on. Rowing rhythm, quiet resting music and the trill, waiting and trill and so on until time to row back. This became so organized that the fishermen would take their orders, row out, catch the determined number of fish and row home to deliver them for dinner.

One day a mother asked the father to take the children out with him while she did the washing. He objected to having children in a fishing boat as it would be too crowded. The mother suggested making the boat bigger and helped put one table behind another. Two other children decided to put their boats together and soon there were several groups of two, three and four boats made into one.

As would be expected, the next question was: "Who owns this boat?" So gradually a game was built up out of these previous games different from them in many respects, but showing the unfolding of the concept of "boat" thru their actual play experiences. In this game one child was the captain, who guided the boat and rang the bell for the engineer, one was the engineer, who made the boat go and blew the whistle, one took the tickets and the others were passengers. The passengers would get off and on whenever the boat stopped and wait for the return trip. At first the waiting was literally sitting down until given permission by the captain to go on board again.

There were many conversations among the passengers which would make an interesting study in themselves if it had been possible to preserve them.

By the time the game had reached these proportions the flowers were beginning to attract the children's attention. One morning R. said: "I guess I'll pick some flowers while I'm waiting." The Play Leader said: "I'll pick tulips. What will you pick?" R. said: "Dandelions." When they were on board again R. told the children she had some flowers for her sick baby. This led to the habit of telling what we had seen or done while waiting for the boat to return. Later the idea developed into telling what we would do when the boat stopped. This list included many things, but looking for flowers and birds and having dinner were the favorite things. The first two were purely imaginary and in the beginning the third was also. Soon the children began to want materials to represent food, then into having a very definite place in the room for the restaurant. This extension necessitated the fourth actor in the drama--the cook.



THE LARGE HOUSE



GROUP OF HOUSES

Before this time the store plays had needed signs, but at first this idea did not carry over into the boat-restaurant play. One day in April the children were playing boat when it began to rain. Immediately there arose a consciousness of the need of a shelter for the waiting passengers and lunch room. This gave the motive for the building of the large house described in the first series.

The first boat play lasted about 15 minutes only. It, and the first table boat plays, were purely activity games and, because of that, held the children longer than the dramatic games did at that time. Toward the end of the year when the game had taken on a purely dramatic form the children would often play for from three-quarters of an hour to an hour, and more than once they have played it for an hour and a quarter.

Dr. Dewey says: "The power of reasoning in little children does not differ fundamentally from that of adults * * *. There are of course differences in subject matter." (T. C. Record, January, 1914, "Reasoning in Early Childhood.")

Using this statement as a reading glass, let us examine some of the reasoning done in these plays.

We find that children are developing habits of thinking. The amount of thinking in school subjects functioned none the less surely because it was done incidentally and with a play purpose.

Many of the conversations based upon these plays gave opportunities for a real interchange of ideas and the sharing of past experiences. The Play Leader contributed, emphasized or corrected false impressions wherever necessary, as a member of the group.

They also gave good training in the use of oral English as well as much information.

Thru the necessities of the play the children learned certain visual signs for many of their ideas, as in lists, prices, location of seats in the boat, and station names.

In number work there were many opportunities for thinking. Besides counting children, seats, dishes, inches, feet and other things, certain number combinations were necessary, especially, "How many more," "How much for two," "How many tables with 1, 2 or 5 at a table," "How many on each side of the table."

There was also a great deal of dramatic expression and some plot construction in these plays. The boat play especially shows several stages of development in dramatic form with its beginning in leaving home for a journey, its climax in the dinner or gathering of flowers, and the return ending in reaching home safely. Towards the end of the year the setting became an important part and the sequence in plot very definite, so that we can truly call it a game, altho it needed spontaneous and immediate interest to furnish the basis of much of the dialogue.

These things developed gradually as the images in the children's minds cleared up. There was a great deal of difference in their concept of "window" between the accidental crack in the corner of a wall and the placing of the windows in the house "so as to see when the boat comes." There was also a clearing up of the ideas boat, duties of the crew, and passengers.

Along with habits of thinking, or formulating a problem and relating means for its solution, came an increase of effort to accomplish the appointed task. The children learned not only the need of effort, but the reward of effort in the finished product.

Another habit the children developed is the habit of motor response, or skill or ability to handle materials. This was not only shown in the greater rapidity and accuracy in building the house, or boats, or preparing for the dinner, but also in their use of impersonation, and language and their ability to weave suggestions from others into the fabric of the play without losing sight of the importance of the determined plan.

The children were not only gaining information and skill in the use of materials, but also were gaining power in cooperation. These plays were social in character and thru their very nature demanded that each accept the responsibilities as well as the privileges of the situation.

INSTINCTS AND EDUCATIONAL METHOD

By LUELLA A. PALMER,

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It is the generally accepted theory that educational method, in order to be most effective must proceed in accord with the development of instinctive activity. It then takes advantage of the strongest propulsive force within the individual. Indeed, we are beginning to realize that the so-called education which tries to combat this elemental force perverts normal tendencies and may develop habits which are worse than those which might be formed if the individual were left entirely unguided.

While in theory we believe that the guided expression of instinctive activity is true education, the idea is still so new that its application to practice is only beginning. The way in which we usually determine the outline of educational procedure is to start with theories, with aims and methods, and then to hunt for the instinctive activities which would most obviously bring the desired result. We are not yet thoroughly convinced as to the educative possibilities of instincts themselves. If we paused to think we should realize that it is by means of their expression that man has attained to his present stage of culture. If educational practice is to be a logical outcome of theory, instinctive expressions must be noted first and then reason and experiment must determine how these activities can be directed towards social ideals.

When educational method is determined by such means, attention is concentrated upon the child, upon what he is trying to do, how he is trying to express himself and what value the present activity brings to him, how it modifies him. Instead of starting with fixed, preconceived ideas of what a child should do and what his environment should be, a constant watch is kept to discover what he wants to do and what he chooses to respond to in his environment. Search is made for the reasons for his choice. In studying the problem an educator tries not to confuse the incidental expressions due to the influence of an artificial environment; he looks for instinctive responses to a normal environment. The task of the educator is to determine the educational value of activity and choice and finally to experiment with a modified environment which might possibly bring greater value.

This attitude towards educational method makes it a constantly changing, developing order of procedure adapted to the individual child. While the instincts are the same for all normal beings, their expressions are varied according to personal bent. The live educator constantly

questions the value of a particular child's expression and the value of the environment which is provided.

The School of Childhood of the University of Pittsburgh is avowedly an educational laboratory where apparent solutions but lead to further testing. It is different from the Montessori schools; it has no formal materials which must always be used in the same way. Materials of many kinds are provided and the child's response to each studied. Here are the slide, swing and other apparatus used in the playground; the kindergarten building blocks are here, of all sizes; large floor blocks; materials for sewing, weaving, painting. There is a garden. These and many other opportunities for activity give a rich environment to which the children can reach and from which they can choose their particular problems. All choices are recorded and later will form a basis for selecting a tentative educational environment.

On the playground where children are allowed the freest expression of their natural inclinations, it is found that the slide, swing and similar apparatus, are in constant use by children between four and eight years of age. Physiologists and psychologists both show that for physical and mental development at this age, emphasis should be laid upon exercising the large trunk muscles. Later bodily control and mental vigor depend upon the right physical development at this period. The child's normal "muscle hunger" directs him towards such activities as sliding and swinging. As trees, hills and fences are unfortunately inaccessible for a large part of our child population, they turn to the apparatus supplied by the playground.

Character development also, comes through the use of these pieces of apparatus. Take as an illustration, the play of four-year-old A—. The first day that he came to the School of Childhood, he saw other children going down the slide. With a very determined, almost frightened expression on his face, he climbed the stairs to the top of the slide and took his turn. When he reached the bottom, he picked himself up as though surprised that he was still intact. He walked slowly back to the steps and with the same determined face took a second slide. After three or four turns he began to laugh as he ran back to the steps. Later after each turn he executed a funny little jig trot, a true dance of triumph and enjoyment. Finally he began to shout. Then, his special problem conquered, he ran off to other play. For a four-year-old child, there was as much character development in this play on the slide as when an adult performs a difficult task. He was stimulated to set his own problem and it took courage and perseverance to solve it.

Observation of the social character of children's plays shows that the child of four may use a toy but seldom cares to have another child share in its use. Children of eight, on the contrary, are rarely happy when playing alone. Between these ages the child's social instinct must de-

velop rapidly. Many books have been written upon the value of social education and more stress is constantly being laid upon the necessity for the right kind of association with playmates during these early years when social consciousness is dawning. In the School of Childhood experiments have been made in allowing the child individual play when he desires it, which is during most of the time when he first comes to school. Gradually, through the luncheon period when of necessity all must gather together at one time and also through the attractive plays which call for more than one child to make them complete, the little group has become welded together. The result has been a self-controlled community cooperating for the sake of richer experiences.

The opportunities for individual play allow a child to develop himself in the direction and manner in which he craves advance. When a new fascinating problem is discovered, a child will sometimes devote his entire time for several days to its solution, and will progress as rapidly in these few days as he would in weeks of time-limited periods for such occupation.

Different problems appeal to different children; the self-activity of human beings does not express itself equally through all channels. Some individuals are of the motor type and prefer bodily activity, others like to use their hands and still others their tongues. One aim of education is to fit a man to contribute to the social whole, the best of which he is capable. The best must be in the form in which nature has fitted him to contribute most. In the School of Childhood, in the development of social groupings, children are not confined to expression thru one kind of activity, each child contributes the form in which he excels. The motor child is the active member of the community, he is the messenger, the expressman; the "manual" child does much of the building; the thoughtful child contributed the planning of the whole. This kind of cooperation lays the best basis for ideal community life.

While observation of the children has led to a reinterpretation of the educational use of instincts dominating or dawning in children between four and eight years, the results have led also to the formulation of many questions such as, what, how and when shall apparatus be used? What is the best basis for gathering children of different temperaments into groups? How far is it wise to allow a child to devote himself to his preferred form of activity? How far shall the play leader limit the environment in order to control the child's form of activity? To try to answer these questions may lead to new light on the interpretation of the instincts themselves. The best educational method cannot be a static thing; it must constantly seek to adapt itself to the better understanding of the course of development of the human being.

PROBLEMS IN SENSORY-MOTOR EDUCATION INVOLVING
THE SELECTION OF PLAY MATERIALS AND APPA-
RATUS FOR SMALL CHILDREN*

By ALICE CORBIN SIES.

Much has been written by educators concerning sense education. Many advocates of new systems of education select educational materials without first distinguishing the means and ends which these materials are supposed to serve. To be truly scientific we must distinguish among various theories of sense education in order to plan a useful and rich environment of objects and materials suited to our purpose. We must, in fact, place ourselves among those theorists who hold one of the following views: (1) That the sense organs themselves can be improved by training. (2) That a general power of sense discrimination can be developed, which will carry over to specific discriminations. (3) That sense training must be specific in order to carry over in specific situations.' If we believe the first, we shall train the senses in a gymnastic way, having little regard for materials and methods. If we believe the second, we shall still emphasize the gymnastic training, but shall try also to improve the brain associations connected with sense impressions, believing that in this way we gain a general discriminative ability which will carry over to specific useful acts. If we believe the third, we shall try to build up specific sense habits which we know to be useful in life. The third view is the only one now generally accredited. The fact that Montessori's statements place her as an advocate of the first or the second theory does not convert us to a discarded view. Dr. Kilpatrick, after a study of Montessori's statements regarding sense education, says in his monograph entitled *The Montessori System Examined*: "These statements certainly seem to imply a belief in the validity of the general transfer of training; and the more one studies Madame Montessori's writings, the more convinced does he become that she holds to some such position."†

Rousseau, of the earlier educators, seems to have foreseen a more modern conception of sense education. "Rousseau saw that they (the senses) are a part of the apparatus of action by which we adjust ourselves to our environment, and that instead of being passive receptacles they are directly connected with motor activities—with the use of hands

**The Montessori System Examined*, p. 46.

†*Reprint from the Kindergarten & First Grade*, February, 1916.

and legs."** He seems also to place great stress on the quality of thinking connected with sense observation, for he says. "It is not enough to use the senses in order to train them; we must learn to judge by their means—we cannot really see, hear, or touch except as we have learned."*** It thus seems that Rousseau sounds the keynote of our modern theory, for he makes the senses primarily active motor organs whose chief business is active and specific sense discriminations. Having accepted the third theory, the problem still lies before us to select a rich environment of play materials which will give the child specific sense training useful in life, and at the same time keep conditions of growth healthful and normal.

While the city no longer gives the child unlimited space to roam about in, fences to climb, and cellar doors to slide down, it is still possible to appeal to the same interests through such play apparatus as the slide, swings, walking beams, and the parallel-bar fence. These are things which can be used together by children and which take on social meaning. The child can use them to reach ends through his whole body and at the same time develop specific sense judgments connected with the use of arms and legs. We are sometimes forgetful that real thinking is just as much connected with the use of the arms and legs as with extraneous objects and school subjects; and also that real thinking is absolutely dependent upon a rich development of the sensory-motor system.

By the time the child is six years old, he has several things to accomplish which require persistent and continued effort: (1) To perfect the reflex movements connected with the spinal cord. (2) To coordinate movements of trunk, muscles, and legs dependent upon growth of the cerebellum. (3) To mature the motor centers in the cerebrum controlling the heavier muscles of trunk, shoulders, and thigh; also the sensory centers. A fair degree of control of motor reactions and sense adjustments in situations useful in life is all that can be safely demanded during these first six years. To bring these essential portions of the brain and spinal cord to a fair degree of efficiency is the chief business of the child's life. The difficulty of this task is heightened by unstable conditions in the growing body, parts of which develop at different times and with different rates of growth, so that the relation of organs, muscles, and nerves is at no time the same. The long trunk, the legs small in proportion, the short neck, head girth out of proportion to chest, intestines and liver relatively large, heart small in comparison with diameter of arteries, low blood pressure, rapid circulation, tissues possessing small resistive power, and a body so large in radiating surface that a tremendous

***Schools of Tomorrow*—John Dewey, p. 12.

****Ibid.*

amount of heat must be generated; all these factors complicate growth and point out definitely that the only safe and sane way to health and development lies in fitting a child's environment and training to each period of development; for the child's first business is self-development. His tasks must be child's tasks, not adult's. Much of the restless activity of children, so irritating to adults, is absolutely essential to child life and development.

Play apparatus seems to provide just the necessary opportunity for sense education in a social environment. The children experiment alone and in groups on slides, swings, parallel-bar fence, etc., and in this way not only work out their own ideas, but also receive suggestions from others. Each piece of play apparatus suggests many uses related to the child's tissue hungers. Perhaps a brief description of the uses to which each piece of apparatus may be put will be suggestive to those who have not already made similar experiments.

THE SLIDE

Sliding is chiefly enjoyed by the children because of the pleasure in smooth, gliding motion with gravitation unchecked by the difficulties that usually accompany movement. Sliding down trees and cellar doors is no longer possible to most children, but every available incline is adapted for sliding purposes. The slide has long been a popular piece of playground apparatus. The nine-foot maple slide sold by Marshall Field & Company, Chicago, is very satisfactory for children of kindergarten age. Where space is limited a slide with adjustable incline which can be detached from the steps and leaned against the wall is best. An important feature in a slide for little children is a series of steps broad enough to prevent the child's falling through, and a side railing to grasp in making the ascent.

Many casual observers note the long line of children who rotate in use of the slide in the busy hours of a crowded playground, and conclude that the slide is a mere stimulus for relaxation. Others see the value of climbing for muscles of legs and arms, note the apparent relaxation from strain which follows the sitting position, and draw the inference that such play is valuable from the physical standpoint only. The writer at one time made a record of at least one hundred play problems invented by children under ten years old in connection with the use of the slide. One example is the following: A little boy of five years made his first perilous journey by climbing cautiously step by step, clinging to the side railing, then, in sitting position, with hands grasping the railing, he let himself be swept downward by force of gravitation. His little face was all puckered up with anxiety, but this expression changed to delight as he landed safely with a slight shock on the gymnasium mat. Quickly running back, he repeated the feat over and over again, changing the rapidity of the descent by strength of grasp. At last he dared to make

the journey downward without holding on. Having mastered this problem, he began to experiment in other ways. One day he noticed another boy sliding down sideways in swimming position, without touching hands or feet to the side railing. The first time he tried to imitate this act, he failed to get the right position and, not trusting himself, caught hold of the side railing several times. After much selection of means and ends in which mind and muscles worked out the problem, he made the descent safely in much the same way the other boy had made it, then repeated the act several times with evident enjoyment. To a careful observer the thinking process involved was none the less important because the end reached was by means of the whole body.

Among the many stunts or problems children work out on the slide the following may be mentioned: They lie flat on their faces and pull themselves slowly downward, regulating the speed by variation in strength of muscular grasp; they slide down in sitting position with hands held high overhead or clasped behind them, and sometimes the older children increase the difficulty of descent by clapping their hands a certain number of times or by throwing and catching a ball; they slide halfway down on the knees and then spring to sitting position before landing.

Dramatic games, such as train, tobogganing, fishing, fireman, etc., are very common in connection with this piece of apparatus, and usually they seem to afford better social situations for the development of social habits and attitudes than the traditional dramatic games. It seems inevitable that all who place value on training the growing body to perform useful and accurate movements will recognize the value of the slide as educational apparatus. While none can foresee accurately just how far the specific activities of climbing, grasping, etc., will carry over into life, it is more than probable that some of the variation in muscular control gained in such play will prove useful in household and manual arts, and the habits of mind engendered by being ever alert to reason out new problems are of inestimable value.

THE WALKING BOARD AND PARALLEL-BAR FENCE

After the mechanics of walking have been accomplished, the energy consumed in building up these movements seeks another outlet. Walking continues to be pleasurable only so long as it involves new and more difficult problems. The child's delight in pulling and pushing toys, such as wheelbarrows, wagons, and animals on wheels, is partly due to the difficulty of controlling a moving object by his own actions. At home the child practices walking on boards and curbs, stepping over cracks, and even in unguarded moments walking on the edges of low buildings and precipices. Schools can satisfy this same desire by providing walking boards, balance boards, and the parallel-bar fence. A walking board

twelve feet long and five inches wide, elevated from the floor by blocks three inches high, is quite satisfactory for four and five year old children. Narrower boards with greater elevation offer greater opportunity to older children for developing balance and skill in walking. Sometimes, too, the children invent stepping paths of various kinds by placing blocks several inches apart in straight rows or in winding circles. Often children from seven to nine years old arrange the blocks in rhythmic intervals to make contrasts in short and long steps on which they play leap-run-run or run-run-run-leap, two fundamental dance movements which later become respectively the polka and schottische. They like, also, to engage in races while carrying empty buckets or oblong blocks on their heads, and to push small wheelbarrows containing pails full of sand. Surely none can doubt the value of such training in building up grace and poise in specific ways.

Montessori advocates the parallel-bar fence for walking plays. The writer has tried an adaptation of her plan with good results. This piece of apparatus consists of two hard wood poles, eight feet long, which fit into a series of holes in two upright posts supported by a heavy base, four inches wide. Little tots walk sideways along this base while clinging to the pole above. In this way they exercise the muscles of legs, trunk, and arms without throwing the entire weight of the torso on the legs, when constant strain of such kind should be avoided. The older children chiefly enjoy performing stunts on the upper bars over a gymnasium mat. Not only games of skill but a large number of dramatic games are invented. One small boy invented a cash-box game. He straddled the lower bar and propelled himself by moving his arms over the top bar in rotary fashion. Both dramatic games and games of skill can be made very beneficial by supervision. They develop the prehensile power of the hand and coordinate various muscular activities needed in pulling and lifting by means of the big trunk muscles. Surely these movements function in work of house or shop.

THE CLIMBING ROPE

Groos says climbing is probably the outcome of a special instinct. The importance of climbing activities in childhood is usually recognized by parents from the time a child begins to creep upstairs and climbs on low seats and tables to the day when the boy's whole ambition centers on climbing some trees or scaling low buildings, rocks, and cliffs. We do not need to be culture-epoch theorists to believe in the value of climbing activities for stimulating good circulation and lung development as well as for building up muscles of trunk and limbs. A climbing rope or pole can be purchased from any dealer of athletic supplies or made by suspending a strong rope knotted at the bottom from a strong, closed

iron hook. The children enjoy various plays of skill and invent many dramatic games in connection with the use of this piece of apparatus. They like to pull themselves up and down the rope and chiefly to swing back and forth with bended knees. As they gain power in prehension they add new problems, such as swinging from the rope to a low trapeze near by. Many dramatic scenes, such as fireman and life-saving crews, are enacted on the rope. In both dramatic games and games of skill the children build up good specific movements in pulling, bending, and kneeling which are sure to prove useful in many kinds of work and play.

THE SWINGS

Swinging is a more passive play than climbing, but none the less enjoyable to children of all races. The mother's arms and cradle being the first sensations of this kind to a baby in arms. What tiny tot does not invent some kind of rocking horse, be it only father's foot or the arm of a chair, and what delight he finds later in swinging on the limb of a tree or in hammocks, rope-swings, and seesaws. All of these swings can be purchased from good athletic supply houses. The wide-seated chair swings suspended by ropes from a strong standard are very satisfactory for little children when the standard is fastened securely to the floor or ground. The standard should be so placed that children can propel themselves by pushing their feet against a wall. In this way the trunk is supported while they exercise the muscles of legs and arms. Many dramatic games take place on the swings. Swimming is a favorite game. The children lie flat on their stomachs on the swing seat and propel themselves by movements of arms and legs in the air.

The low trapeze swing can also be secured from athletic supply houses or made from an old broom handle and strong rope. It combines well with the climbing rope, as many games can be played out by swinging from one to another.

THE SPRINGBOARD

This piece of apparatus can be modeled after the Spalding springboard, except that it should be made lighter and more flexible. If placed in the middle of the room the children like to run and jump various distances on the soft gymnasium mat. Chiefly they enjoy using the elevation for a spring and jump on the low trapeze. Various dramatic games arise in this way. Boat plays are enacted by using brooms for oars; or train plays by jogging a various number of times for various distances between cities. The running, jumping, and swinging movements involved are invaluable for building up good muscular movements of reaching, pulling, and jumping—all useful in life.

The prevalence of throwing plays among people of all nations leaves little doubt that throwing is at bottom instinctive. From the time when the playful infant drops his toys for the willing mother to pick up, to the day when the lad demands a highly specialized game of ball, throwing continues to allure and entice. To quote from Sigismund: "All children like to throw and are often blamed for it unjustly. We should remember that although some window panes may be endangered by such play, it lays the foundation for man's supremacy over the animals and that by means of it muscles are gradually developed and strengthened." While we may believe that it is no longer necessary to hurl missiles in order to secure food or conquer one's adversaries, throwing is still useful for general and specific muscular adjustments. Downward throwing usually appears first, but is soon followed by forward and upward throwing, also throwing by means of a blow and throwing at a mark. Numerous are the games of all nations involving these fundamental movements. Besides the numerous games known to play leaders of small children, one piece of apparatus deserves special mention. It is a low basketball goal, to be used when throwing at a mark becomes a vital interest. This can be secured without the pole from an athletic supply house, or made from hoop and net and fastened on the wall at various distances, to suit the children's aim. The upward reaching and throwing movements are especially good to develop the large fundamental muscles of neck, trunk, and arms. These specific reaching movements are useful in housework and various manual occupations.

Summing up, then, the appropriateness of selected pieces of play apparatus as a part of the social and physical environment of the child, we find that such apparatus serves the following uses: (1) It affords stimulation for physical development of the growing body. (2) Many plays afford opportunity for the child to reach ends thru the entire body. (3) The specific skills attained are connected with useful life activities; reaching, pulling, grasping, walking, bending, jumping, climbing, etc. While the degree to which these skills are transferred to later life situations depends upon the common element in both situations, the probability of the recurrence of this common element is greater than in any line of formal sense training, for the artist, artisan, housewife, farmer, professional and business man use to greater or less extent the fundamental movements learned in early life. (4) These pieces of apparatus represent things which can be used together by children for social purposes. (5) The varying uses to which the apparatus can be put places a premium upon inventive, creative play leading to progressive development of imagination, reason, and judgment in relation to the situations concerned.

And now we come to our second problem of providing a rich environment for education in childhood—namely, the selection of objects and play materials which answer the same requirements as did the play apparatus. We believe with Dewey that "Education in a medium where things have social uses is necessary for intellectual as well as for moral growth. The more closely and more directly the child learns by entering into social situations, the more genuine and effective is the knowledge he gains."* Also do we agree with Pestalozzi when he says, "True human wisdom has for its bedrock an intimate knowledge of the immediate environment and trained capacity for dealing with it. The quality of mind thus engendered is simple and clear-sighted, formed by having to do with uncompromising realities and hence adapted to future situations. It is firm, sensitive, and sure of itself."**

To give an "intimate knowledge of the immediate environment and trained capacity for dealing with it" is very difficult for any advocate of one system to accomplish. Even Pestalozzi, whose vision pointed out the necessity of social contacts in the environment, often substituted object teaching for these richer contacts. Froebel's emphasis on logical sequences in the use of materials led many of his disciples to become formal disciplinists. Montessori says in her chapter on sense training that "the aim is not that the child shall know colors, forms, and the different qualities of objects," while the writer contends that such specific knowledge is the most valuable asset the child can have. It seems imperative that we become eclectic and select a rich environment of objects and materials suited to our own purposes. This was the problem confronting those planning to equip the School of Childhood of the University of Pittsburgh. Four years of experimentation with play materials of various systems in the social environment possible in the city play rooms had forced the writer to certain conclusions regarding the social usages of materials. While materials were chosen from all sources, they were used differently than by the devotees of any one system. They were not presented to the children arbitrarily. The child on coming to the school found an environment rich in objects. After a casual exploration of his environment, in which he experimented with materials in rather a haphazard way, his individuality began to assert itself. He chose his own mode of expression, devised his own ends, and was interfered with only when his choices were below his powers and capacities. The home-play-room environment afford plenty of suggestions of a good sort and when he needed more definite suggestion the play leader was there to stimulate and to guide. Thruout his play he was permitted to move about freely, to talk and communicate with his playmates, and,

*Page 63, *Schools of Tomorrow*—Dewey.

**As quoted by Dewey, p. 63, *Schools of Tomorrow*.

in fact, construct his own environment, physical and social. After two years of experimentation with this plan it seems promising in results. Definite conclusions await tests which will show the results gained five of six years hence. Perhaps some illustration will show the social use of materials upon which the School of Childhood places emphasis.

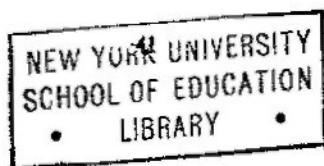
If a child wishes to build a house he selects a place and hunts for blocks of required shape and size, as the needs of the building suggest. He is not limited by being given a box containing a set number of blocks out of which somehow, some way, he must build the house he has in mind. He gets each block or board as its need is suggested. He has the range of the entire environment for means to accomplish his purpose. His fence may consist of chairs, or blocks, and his pavement may be most realistically made out of bricks and sand. His house when finished may occupy as much floor space as is compatible with the needs of other children and he may draw into his play any child who becomes interested in his problem.

If a little girl wishes to play house, she may incorporate into her play any material she chooses. She may utilize boxes, chairs, boards, or blocks, and furnish her house with useful toys, such as dishes, dolls, beds, tables, chairs, brooms, stoves, etc., or she may construct out of clay such household utensils as she needs. She may incorporate into her play any number of children as members of her social group, brothers, sisters, nurses, doctors, etc. She may wash and dry real dishes, serve meals approximating reality, and make beds as her mother does. The play leader's function here is to stimulate through imitation the development of habits allied to home and to the social arts. The child is shown how to wash doll's clothes as her own are washed at home, and to iron them with a hot iron. She is encouraged to enlarge her doll's wardrobe in ways commensurate with her social knowledge and manual skill. She learns first steps in the making of things in much the same way as primitive man does. The first crude sewing is gradually replaced by more utilitarian models. The first carpets are usually woven out of coarse pieces of cloth on a crude loom, and the first painting and decorating are usually related to real objects used in play. She learns about color from her dolls' dresses in much the same way in which she will discriminate in clothing and textiles in later home-making situations. She learns form, size and dimensions from the use of toys, dolls, boards, boxes, spools, and papers which she handles in working out play problems in a way suggested by real experience in the home and the larger social environment. Her ideas of size are not gained from fitting cylinders of various heights and width into fixed holes in a box, or her knowledge of form limited to fitting geometrical insets into corresponding places in a framework of wood. Her ideas of color are not gained by pasting parquetry circles or by arranging tablets wound in colored silk in chromatic scales. In brief,

her experience with color, form, size, and weight are gained from ordinary objects used in daily contacts. The knowledge so gained is rich and varied enough, not only to build up specific skills, but to enlarge concepts so that common elements are likely to function in untried situations

It seems more than likely that much of the training gained through the didactic apparatus of Montessori will not function in later life. The kindergarten, too, has not been entirely blameless in giving training impracticable in life. Many equipment lists show that paper folding, weaving, card sewing, and parquetry work are still used in spite of the tendency to substitute constructive material adapted to problem uses. Similar limitations may easily be charged to the account of the primary school. For example, much of the busy work in arithmetic and reading is a mechanical drill on formal problems unlikely to reoccur in real life situations

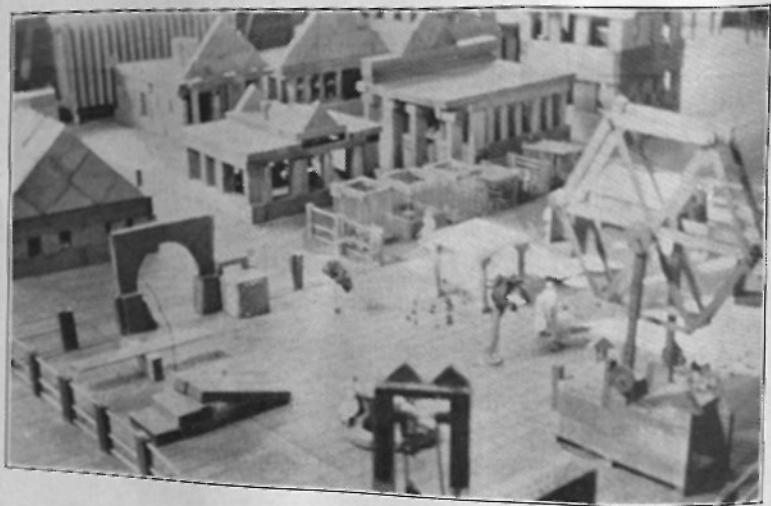
Perhaps a list of play materials used in the School of Childhood, University of Pittsburgh, may prove suggestive. Because the experiment is too young to yield conclusive evidence in regard to the importance of certain materials over others in leading up to specific skills useful in life, no effort has yet been made to standardize skills. The card records show that some children have gained in certain skills at the expense of other skills, but that all the children show a marked gain in personal initiative, inventiveness, and ability to devise and follow out a purpose once chosen. After six or seven years, the records of results ought to speak for themselves.



LIST OF PLAY MATERIALS AND APPARATUS

1. Slide.
2. Swings.
 - a. Chair swings.
 - b. Low trapeze.
3. Walking boards.
4. Parallel-bar fence.
5. Springboard.
6. Climbing rope.
7. Low basketball goal.
8. Blocks.
 - a. Nest of blocks.
 - b. Large blocks made to order of hard maple in five sizes.
 - Cubes, 5x5 inches.
 - Oblongs, $2\frac{1}{2}$ x5x10 inches.
 - Triangular prisms made by cutting cube diagonally into two and four parts.
 - Pillars made by cutting oblongs into two parts.
 - Plinths made by cutting oblongs into two parts.
 - Light weight 12-inch boards, 3 to 7 feet long
 - c. Froebel's enlarged fifth and sixth gifts.
 - d. Stone anchor blocks.
 - e. Architectural blocks for flat forms.
 - f. Peg-lock blocks.
9. Dolls.
 - a. Two sizes of unbreakable celluloid dolls.
 - b. One large life-sized baby doll.
 - c. "Do With" or "Schoenhut" doll.
 - d. Rag dolls made by children out of white paper cambric with red, orange, yellow, green, blue, and violet colored capes and bonnets.
 - e. Paper dolls, soldiers, Indians, etc, to be used in dramatic play.
10. Balls.
 - a. One smallest size association football for throwing and kicking
 - b. Large rubber balls to bounce, catch, and throw.
 - c. Large rubber balls covered with knitted yarn in primary colors, to be bounced, tossed, and rolled.

- 11 Pulling toys.
Two-wheeled carts, wheelbarrows, also rabbits, ducks, horses, etc., on wheels. Iron trains of cars, freight and passenger.
- 12 Toys for house plays
Doll beds, carriages, tables, stoves, washtubs, irons, brooms, dishes, and tin molds for sand play.
13. A set of wooden or iron toys representing domestic and farm animals; also a set of trees of various sizes to be used in representative play.
14. Sand table
- 15 Wooden spheres, cubes, and cylinders in two sizes for stringing (Second gift beads of kindergarten)
- 16 Bath-room tiles for constructive art purposes.
- 17 A box of miscellaneous articles for house and store play spoons, spools, various-sized boxes, stones, pebbles, buttons, shells, bells, enlarged sticks of the kindergarten, and ribbon bolts filled with sand, rice, pebbles, shot; bottles, etc.
- 18 Simple block and cardboard puzzles representing animals, *Mother Goose*, and familiar scenes.
- 19 Folding paper, cardboard, boxes, milk bottle tops, collar buttons, paper fasteners, etc., to be used in constructing toys.
20. A box of sewing materials, including zephyr and raffia
- 21 A carpenter's bench fitted out with odd pieces of wood, nails, glue hammer, saw, etc
22. Peg boards of the kindergarten for dramatic constructive use.
23. Games
 - a Target games.
 - b. Jumping rope
 - c Bean bags.
 - d. Ring toss
- 24 Paints, crayola, and drawing materials.
25. Homemade looms, roving, rags, and eight-ply worsted for weaving rugs, blankets, etc, for the dolls.



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